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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,287	07/03/2003	Horst Corduan	LINDE-597 P1	5770
23599	7590	08/06/2004	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C.			LEUNG, RICHARD L	
2200 CLARENDON BLVD.			ART UNIT	
SUITE 1400			PAPER NUMBER	
ARLINGTON, VA 22201			3744	

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/612,287	Applicant(s) CORDUAN ET AL.	
	Examiner Richard L. Leung	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 01/18/2002. It is noted, however, that applicant has not filed a certified copy of the 10201832.4 application as required by 35 U.S.C. 119(b).
2. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Germany on 01/18/2002. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Specification

3. The listing of references in the specification (page 2, line 13) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.
4. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper (page 18, lines 14-16). Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the

referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

5. The disclosure is objected to because of the following informalities: the word, "Ass" on page 17, line 10 is understood to be -- As --. Appropriate correction is required.

Drawings

6. Although the examiner accepts the current drawings, it is strongly recommended that figures 2-8 and 11-14 include labels indicating the orientation of the drawings, showing for example, the directions being considered the height, width, and depth as discussed in the specification, in order to make the disclosure easily understandable. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

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applicant will be notified and informed of any required corrective action in the next Office action.

Claim Objections

7. Claim 1 is objected to because of the following informalities: there is need for a transitional phrase (e.g. --comprising of--) following the word, "flows" on the second line of the claim in order to make the claim into a complete sentence. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the limitation "distributed uniformly over the entire heat exchanger core," as recited on the last line of the claim. As best understood in light of the specification, this limitation shall be treated as meaning distributed over the entire width of the heat exchanger core for the remainder of this action.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 5, 6, and 10-16 are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art, as disclosed by figures 1-4 and the present specification. The admitted prior art discloses a plate heat exchanger 1 for indirect heat exchange between at least one heat transfer medium/cooling medium 10 and 20, and a plurality of fluid flows 30, 40, and 50. Said plate heat exchanger 1 comprises a heat exchanger core 9, having a plurality of heat exchange passages for flow of at least one heat transfer/cooling medium 10 and 20, flow of a first fluid 40, and flow of a second fluid 30. Said heat exchanger core 9 having a first component area 48 containing heat exchange passages for the first fluid flow and a second component area 38 containing heat exchange passages for the second fluid flow. Said first and second component areas 48 and 38 are not in fluid communication and each extends over the height of the heat exchanger core 9 (see Figs. 3 and 4), as broadly recited by claim 1. Claim 5, as best understood, requires that said heat transfer/cooling medium 10 and 20 be distributed over the entire width of said heat exchanger core 9. As understood from the specification, it is already disclosed that it is conventional for said flows 10 and 20 to be distributed over the entire width of said heat exchanger core 9 (page 13, lines 12-14). Said plate heat exchanger 1 is also disclosed as having a third component area 58 which is not in fluid communication with said first and second component areas 48 and 38 and which extends over the entire height of said heat exchanger core 9 (see Fig. 2), said third component area 58 containing heat exchange passages for flow of a third fluid 50, as broadly recited by claim 6. Said heat exchanger 1, as disclosed in prior art Fig. 1 and the accompanying description beginning on page 11 of the present specification, is

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used in a process for cryogenic air-separation comprising separating air into an oxygen product stream 50 and a nitrogen product stream 30 in an air rectification system, said heat exchanger 1 used for cooling feed air 10, as required by claim 10. Furthermore, the admitted prior art discloses a process for indirect heat exchange of several fluid flows 30, 40, and 50 with a heat transfer medium/cooling medium 10 and 20 in a heat exchanger core 9 comprising routing the heat transfer medium/cooling medium 10 and 20, a first fluid flow 40 and a second fluid flow 30 through a plurality of heat exchange passages. Said first fluid flow 40 is routed through a first component area 48 of the heat exchanger core 9 and said second fluid flow 30 is routed through a second component area 38 of the heat exchanger core 9, said first and second component areas 48 and 38 are not in fluid communication and each extends over the entire height of the heat exchanger core 9, as broadly recited by claim 11, and it disclosed that said first and second fluid flows 40 and 30 are obtained by cryogenic separation of feed air, as required by claim 15, and are brought into indirect heat exchange with air, as required by claim 16. Claim 12 requires that said first and second fluid flows 40 and 30 each have a pressure of less than 3.5 bar, and claim 13 requires that pressure be between 1.1-1.8 bar. It is disclosed in the discussion of the admitted prior art, on page 11, lines 18-20, said fluid flows 40 and 30 have a pressure of roughly 1.3 bar. Claim 14 requires another fluid flow having a pressure of more than 4 bar be routed through the heat exchanger core 9. As disclosed in prior art Figs. 1 and 4, an additional fluid flow 60 is routed through said heat exchanger core 9, and said fluid flow 60 is disclosed as having a pressure of more than 5 bar on page 13, lines 20-21.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 2-4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Goto et al. (US-5979182). As already discussed above, the admitted prior art discloses a heat exchanger 1, having a core 9 comprising heat exchange passages for a heat transfer/cooling medium 10 and 20, a first fluid flow 40, and a second fluid flow 30 defined by first and second component areas 48 and 38 respectively, each of which extends over the entire height of said heat exchanger core 9. There is also a similar third component area 58, as already discussed above, containing heat exchange passages for flow of a third fluid 50. Although it is disclosed that said heat exchanger 1 is a plate heat exchanger, it is not clearly disclosed that said plate heat exchanger 1 actually has a plurality of separating plates arranged parallel to one another wherein the spaces between said plates contain said heat exchange passages, and the discussion of the admitted prior art fails to disclose that said component areas 48 and 38 each extend over the depth of the heat exchanger core 9, as required by claim 2 and 7, or that the first component area communicates with a single distributor and collector that traverses the depth of the heat exchanger core, as required by claim 9. Goto et al. teach a method and apparatus for air separation comprising a plate heat exchanger A with different component areas A₁-A₄. Said

component areas A_1 - A_4 each define a heat exchange passage contained within the spaces between a plurality of parallel separating plates (heat exchange walls), through which different fluids flow, as depicted in Figs. 6-8 and generally described in the paragraphs beginning in column 2, line 61 and column 3, line 10. It is clear from the arrangement of the distributors/collectors (headers H) that traverse over the entire depth of the heat exchanger A, as shown in Fig. 6, that the component areas, each of which communicates with a separate header, also extend over the depth of the heat exchanger core of heat exchanger A. This can also be inferred from Fig. 7, which illustrates the openings of the passages extending along the depth of the heat exchange core. It would have been obvious to one of ordinary skill in the art to have included the plurality of separating plates in the heat exchanger disclosed in the admitted prior art, and to have the component areas and associated distributors/collectors extend over the depth of the heat exchanger because Goto et al. teach that this arrangement is conventional and can be used to efficiently effect heat exchange among the fluids of involved in air separation (see particularly the paragraph beginning on column 2, line 61). Claims 3, 4, and 8 add the limitation of having the heat exchange passage for the flow of heat transfer medium/cooling medium extend over the entire width of the heat exchanger core. As already discussed above with regards to claim 5, the admitted prior art discloses this element.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US-3282334 Stahlheber 11-01-1966: discloses a plate heat exchanger with separate component areas for a plurality of fluid streams that appear to extend the entire height of the heat exchanger.

US-4128410 Bacon 12-05-1978: discloses a gas treatment unit with a plate heat exchanger comprising a plurality of separating plates between which flows different fluids.


15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 703-306-4154. The examiner can normally be reached on Mon-Fri.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung
Examiner
Art Unit 3744

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